



COMMUNICATION SYSTEM CAPABLE OF REDUCING
COMMUNICATION LOAD

RECEIVED

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Background of the Invention

5. 1. Field of the Invention

The present invention relates to a communication system using a radio apparatus. More particularly, the present invention relates to a communication system that can reduce a communication load on an information provider ~~providing of~~ various contents or data.

2. Description of the Related Art

Recently, various radio apparatuses such as a portable telephone are widely used not only ~~in a call~~ for calls but also ~~in for~~ various other communications. ~~The various~~ Such communications include, for example, a download of ~~various~~ data such as music data and the like from a predetermined home page by using the Internet, reception of ~~a~~ mail, and upload of picture data, such as a photograph ~~took~~ taken by ~~himself~~ a user and the like, to a home page of a dealer in order to produce a photograph album.

~~As An example of~~ such a communication system, ~~for example,~~ is the Japanese Laid Open Patent Application (JPA 2000-90039) that discloses "Music Distributing Method, Transmitting Apparatus And Method,

And Reproducing Apparatus And Method". In this communication system, a music server and a client are connected to ~~an~~ the Internet. The client prepares a public key and a secret key based on an ID ~~peculiar~~ unique to the reproducing apparatus. The public key is sent to and registered in ~~the~~ a server, and the secret key is stored in the reproducing apparatus. The client requests the server to distribute music data. The encryption based on the registered public key is performed on the music data fetched from a music database (DB). The encrypted music data is sent to the client, and stored in the reproducing apparatus. At a time of a reproduction, the music data is decoded and reproduced in accordance with the secret key stored in the reproducing apparatus. The music data stored in the reproducing apparatus is encrypted in accordance with the key prepared on the basis of the ID ~~peculiar~~ unique to the reproducing apparatus. Thus, the other reproducing apparatuses ~~can not~~ cannot reproduce the music data. This configuration enables a system for distributing music data to sufficiently ~~consider the protection of~~ protect the copyright of the music data to be distributed.

Also, Japanese Laid Open Patent Application (JP-A-Heisei, 10-150460) discloses "Radio Picture Communication System". In this radio picture

communication system, a video server opens various picture information stored therein as a common file
55 onto a network. A terminal station sends a title of picture information, which it desires to receive, as control information to a radio control station by using a second radio communication path. The control radio station sends the title of the picture
60 information included in the control information received from the terminal station, to a radio picture station, and then instructs to send this picture information to the terminal station. In response to this instruction, the radio picture station reads out
65 the picture information corresponding to the instruction from the common file, and then sends the picture information to the terminal station by using a the first radio communication path. Thus, the radio picture terminal can ~~comfortably~~ conveniently receive
70 ~~the high quality~~ picture information with a high quality.

Moreover, Japanese Patent No. 2924865 discloses "Voice Mail System". In this voice mail system, a server and one or more terminals are connected through
75 a communication medium to each other. The server manages a memory for storing a plurality of voice mail data as an identifiable file in a memory area assigned for each terminal. The server is provided with

transmitting means and memory control means. The
80 transmitting means, when receiving a mail request
through the communication medium from the terminal,
reads out the voice mail data from the memory area of
the memory assigned to a terminal of its transmission
source, and transmits to the terminal of the
85 transmission source. The memory control means, when
receiving a mail edition signal, ~~again accumulates by~~
~~inserting or adding~~ insert or add the voice mail data
in the mail edition signal to a position specified by
the mail edition signal, in the memory area of the
90 memory assigned to the terminal of the transmission
source. This configuration ~~enables the~~ allows for
extremely effective communication in a communication
network ~~which~~ characterized by high costs and
transmission ~~speed~~ speeds ~~is~~ slower than that of a
95 wire line, ~~and cost is expensive~~, because the same
voice mail data is not transmitted and received
between the server and the same terminals ~~in many~~
multiple times.

Fig. 1 shows an example of the conventional
100 communication system disclosed in Japanese Laid Open
Patent Application (JPA 2000-90039), in which a
portable telephone is used as a radio apparatus. In
this communication system, a portable telephone 101
wirelessly communicates with a base station 102. The

105 base station 102 is connected to a portable telephone
network 103, and the portable telephone network 103 is
connected to ~~an~~the Internet 104. A content server
105 for providing various contents is connected to the
Internet 104. The portable telephone 101 can access
110 ~~to~~the desirable content from server 105 through the
portable telephone network 103 and the Internet 104.
For the purpose of easy explanation, Fig. 1 shows one
portable telephone 101, one base station 102 and one
content server 105, ~~respectively~~.

115 In this communication system, let us suppose
that the content server 105 is ~~the music downloading~~
~~exclusive~~a server ~~for providing that exclusively~~
provides a service of downloading music data. When a
new song of a popular singer or the like is sold or a
120 hit song is produced, a large number of portable
telephones 101 ~~intensively~~ access ~~to~~ the content
server 105 dedicated to the music downloading
operation. The content server 105 establishes a link
to each of the ~~accessed~~ portable telephones 101=
125 accessing the server, and distributes the music data
requested by each of them. Thus, if the accesses are
concentrated on the particular content server 105, ~~a~~
the data distribution ~~amount~~ rate per hour ~~to~~ for each
portable telephone 101 from the content server 105
130 becomes very small. As a result, the time it takes

for each portable telephone 101 to download the music data becomes long. Hence, this results in a ~~problem~~high ~~that a communication costs is expensive.~~

Conventionally, ~~To solve the~~ above problem, ~~conventionally, such a structure is employed that is~~
135 ~~solved by employing a structure of several servers are~~
~~prepared on the side of alongside the content servers~~
~~server 105 in order to disperse distribute the~~
~~loadsload.~~ This ~~Such~~ structure causes the facility
140 cost on the side of the content ~~servers~~ server 105 to
be increased. Such a measure may be effective for ~~the~~
a content server 105 having a high access frequency.
However, ~~if the in the server on which the accesses~~
~~are transiently are temporarily concentrated on a~~
145 server, ~~such a the~~ fact that the size of the facility
~~is increased correspondingly to the depends on the~~
access peak is creates a problem ~~from the viewpoint of~~
~~the effective usage related to efficient use of the~~
communication system. Thus, the problem that the
150 downloading of ~~the~~ data in the case of ~~the~~ load
concentration ~~requires requiring~~ the abnormally long
time is ~~not~~ still not solved in many content servers.

As mentioned above, the music distribution has
been described as ~~the~~ an example. However, there may
155 be a case that an overload is ~~transiently temporarily~~
induced on the server side when electronic mails are

collectively distributed to the side of the portable
telephones, or when personal information is
distributed to the portable telephones under a
160 predetermined condition. This results in ~~the a~~
~~similar problem. The similar problem is~~ induced
even when the uploading operations are ~~transiently~~
temporarily concentrated.

Summary of the Invention

165 Therefore, an object of the present invention is
to provide a communication system which can avoid an
~~occurrence of an~~ overload condition even if accesses
for ~~communications~~ communication are ~~transiently~~
170 temporarily concentrated on a particular apparatus
such as a server and the like.

In order to attain the above-mentioned
~~object~~ objective, a communication system according to
the first aspect of the present invention includes a
175 network, a distribution ~~server~~ center and a client
terminal.

The distribution ~~server~~ center is ~~composed~~
comprised of a distribution server containing any
number of first folders to which files read from a
180 content server connected to said network, an actuation
timing setting section for setting actuation ~~timings~~
time to process the files stored in the first folders,

a file read section for reading out the corresponding
file at the arrival of the actuation timing set by the
185 actuation timing setting section and a radio
transmitter for wirelessly transmitting the file read
by the file read section.

The client terminal is composed of any number of
second folders which are correlated to at least a part
190 of the first folders in a one-to-one relationship, a
radio receiver for wirelessly receiving the file
transmitted by the radio transmitter and a storing
section for storing the file received by the radio
receiver in the second folder corresponding to the
195 first folder.

That is, in the first aspect of the present
invention, the distribution server and client terminal
have any number of folders in which at least parts
thereof are correlated to each other in the one-to-one
200 relationship. The distribution server stores a file
read from a content server in the first folder. The
actuation timing setting section sets an actuation
timing to process the file stored in the first folder.
The file read section reads the corresponding file at
205 the arrival of the actuation timing set by the
actuation timing setting section. The radio
transmitter wirelessly transmits the read file to the
client terminal. In the client terminal, the radio

receiver receives the file transmitted by the radio
210 transmitter. The received file is stored in the
second folder corresponding to the first folder.

Thus, for example, if the downloading of a
predetermined file ~~are~~ is requested by ~~a number of the~~
more than one client terminal~~terminal~~, and a long
215 time is required in order ~~to~~ for the transfer of the
file to those client terminals, the content server ~~to~~
from which the downloading of the file is requested
stores the file in the first folder of the
distribution server. Since the distribution server
220 has the folder correlated to the client terminal, the
distribution server can wirelessly transmit the
requested file, in ~~such a condition~~ a way that the
loads are dispersed by setting the actuation timings.

Such a ~~constitution that the~~ configuration
225 including a distribution server is mediated enables as
a mediator between the portable information terminal
and the content server, on which the accesses from the
clients are ~~transiently~~ temporarily concentrated, ~~to~~
~~disperse the loads for the transfers of the~~
230 files allows for spreading of the transfer load. Also,
~~it~~ It is effective also efficient to install a cache
memory in the distribution server.

In the first aspect of the present invention,
the actuation timing setting section may set a

235 periodic interval as the actuation timing. If the
transfer of the file is not ~~in a great hurry~~urgent,
the processes on the distribution server can be
dispersed by properly setting the periodic interval.

In the first aspect of the present invention,
240 the actuation timing setting section may be used to
set a time as the actuation ~~timing~~time. According to
this ~~constitution~~configuration, a ~~technique for using~~
~~nighttime~~ in a case of a file transfer having no
~~emergency that is not urgent, nighttime~~ can be used to
245 thereby ~~make~~lower a communication fee ~~cheaper~~ and
also attain the ~~effecient~~effective usage of the
distribution server.

In the first aspect of the present invention,
the actuation timing setting section may be actuated
250 when a new file is stored in the first folder, and the
corresponding file stored in the first folder is
removed after the new file is transferred to the
second folder through the radio transmitter and the
radio receiver and is stored therein.

255 This ~~shows the~~ exemplifies a case in which the
transmission is done at real time when the file is
stored. As for the transfer of the ~~emergent~~ an urgent
file, this ~~constitution enables an emergent~~
configuration also allows for an urgent distribution
260 of the file. Of course, if the distribution server is

responsible for the distributions of the files from the various servers and the like, the transfer timings ~~themselves~~ of the ~~emergent~~ urgent files can be dispersed entirely and temporally. Thus, there is
265 little fear that the loads are concentrated ~~on~~ within a particular time frame.

A communication system according to a second aspect of the present invention is composed a network, a distribution server which is connected to the
270 network and has a first folder, a mobile terminal which is connected to the network and has a second folder correlated with the first folder, and a position detector which detects a current position of the mobile terminal. The distribution server includes
275 a file transmitting section that wirelessly transmits a file stored in advance in the first folder to the second folder when the position detector detects that the current position of the mobile terminal is a predetermined position.

280 According to this communication system, the mechanism in which a necessary file is transferred from the distribution server to the mobile terminal, with positional information as a trigger, is effective ~~for a~~ as an area guide ~~of a land~~ and the like, such as
285 a case when a user of the mobile terminal visits an unfamiliar ~~land~~ place.

In the second aspect of the present invention, the file transmitted by the file transmitting section is the file for storing information of a predetermined territory, and the mobile terminal has an information display for displaying the information of the territory when receiving this file.

That is, the mobile terminal has the information display for displaying information, such as a display, a speaker or the like, and the file for storing the information of the predetermined territory is sent and displayed by the display.

A communication system according to a third aspect of the present invention is composed of a network, a mobile terminal which has a first folder and a first communication unit for carrying out a radio communication, a distribution server which is connected to the network and has a memory region correlated to the first folder and a second communication unit for carrying out a radio communication and a file transferring unit which, when a file is stored in the memory region of the distribution server, transfers the file to a particular memory region which is connected through the network to the distribution server.

According to this communication system, if the uploading operations of the files from the mobile

terminals are concentrated on the predetermined regions among the several particular memory regions, the distribution server is placed between them. Then, the mobile terminal stores the file in the individual memory region corresponding to each of the mobile terminals within the distribution server. Thus, the concentration of the loads is avoided. Hence, this has a merit that the mobile terminal can transmit and receive the file without directly recognizing the location of the particular memory region.

Brief Description of the Drawings

Fig. 1 is a system configuration view showing an example of a conventional communication system in which a portable telephone is used as a radio unit;

Fig. 2 is a system configuration view showing a schematic configuration of a communication system in a first embodiment of the present invention;

Fig. 3 is a block diagram showing ~~a~~the main configuration of a portable information terminal used in the first embodiment;

Fig. 4 is a plan view of a display showing an example of a menu screen when a user accesses ~~to~~a portal site, in the first embodiment;

Fig. 5 is a plan view of a display showing an example of a menu screen for ~~a~~music distribution when

a user selects a button "Music Distribution" in the
340 first embodiment;

Fig. 6 is a plan view of a display when a user
selects an item "Minimum Fee" in the first embodiment;

Fig. 7 is an explanation view showing an example
of a folder used in the first embodiment;

345 Fig. 8 is an explanation view showing a flow of
~~a process~~ processes among a music server, a
distribution server and a portable information
terminal when the distribution server transmits music
data to the portable information terminal, in the
350 first embodiment;

Fig. 9 is a plan view showing a ~~condition when a~~
portable information terminal ~~displays~~ displaying a
mail setting screen of a distribution server, ~~in order~~
~~to set a~~ for the purpose of setting distribution of a
355 an electronic mail, in the first embodiment;

Fig. 10 is a flowchart showing a ~~the~~ process
~~when of~~ a distribution server ~~accesses to~~ accessing a
mail server and ~~stores a~~ storing mail in a
corresponding folder, in the first embodiment;

360 Fig. 11 is a flowchart showing a ~~flow in a~~
~~distributing the flow of an electronic mail~~
distribution process of ~~an electronic mail~~ in a
distribution server, in the first embodiment;

Fig. 12 is a flowchart showing a ~~the~~ flow of a

365 typical process ~~of~~in a distribution server, in the
first embodiment;

Fig. 13 is a system configuration view showing a
schematic configuration of a communication system in a
second embodiment;

370 Fig. 14 is a plan view of a display showing an
example of a setting menu of a territory guide service,
in the second embodiment; and

Fig. 15 is a system configuration view showing a
schematic configuration of a communication system in a
375 third embodiment of the present invention.

Description of the Preferred Embodiments

The present invention will be described below in
detail with reference to the following embodiments.

380 (First Embodiment)

Fig. 2 shows the schematic configuration of a
communication system in a first embodiment of the
present invention. In this communication system, a
portable information terminal 201₁ represented by a
385 portable telephone or a portable computer having a
communication function₁ is connected through a radio
base station or a circuit device (not shown), such as
a modem (a modulation demodulation device), a router
and the like, to ~~an~~the Internet 204. A music server
390 205 for storing a content of music and a mail server

206 for storing a-mail are connected to the Internet
204, as an example of a content server for providing
various contents. Also, a distribution center 200
includes a distribution server 207 for distributing
395 the data of ~~these~~ the content servers 205, 206 and a
predetermined content server 208 used for accumulating
a home page as a portal site. The content servers 205
and 206, and the predetermined content server 208 are
also connected to the Internet 204. The distribution
400 ~~server-center 207-200~~ also contains a distribution
data store memory 209 for transiently storing the data
for a-distribution and a radio unit 210 for wirelessly
distributing the data to the portable information
terminal 201. A private cable 211 ~~is connected~~
405 ~~between~~ the music server 205 and the distribution
server 207 and a private cable 212 ~~is connected~~
~~between~~ the mail server 206 and the distribution
server 207.

Fig. 3 is a block diagram showing a the main
410 configuration of the portable information terminal
used in the first embodiment. The portable
information terminal 201 is composed of a CPU (Central
Processing Unit) 221, ROM 223, RAM 224, a display
control circuit 225, a display 226, a
415 transmission/reception circuit 227, an antenna 228, an
operation control circuit 229, an operation unit 231,

a voice circuit 232, a microphone 233, a speaker 234 and a bus 222.

The CPU 221 is connected through the bus 222, such as a data bus, an address bus, a control bus and the like, to respective sections within the portable information terminal. The ROM 223 is a read only memory for storing a program to carry out various controls of the portable information terminal 201 and other fixed data. The RAM 224 is a memory for work. ~~A part the~~ The RAM 224 constitutes a detachable memory medium. ~~If as the a~~ detachable memory medium, ~~a medium~~ having a relatively large capacity is assembled in the portable information terminal 201, a large amount of downloaded music data and the like can be stored in the medium.

The display control circuit 225 is used to display visual data on the display 226, such as a liquid crystal or the like, assembled in the portable information terminal 201. The transmission/reception circuit 227 is used when data is transmitted and received through an antenna 228. The operation control circuit 229 is used to input operation data from the operation unit 231 having a plurality of button switches (not shown) and ~~carry out a control for putting on or off~~ turning those button switches on or off. The voice circuit 232 is used for controlling

an input/output of a voice, and it is connected to the microphone 233 and the speaker 234.

445 It should be noted that the music server 205, the mail server 206 and the content server 208 which are shown in Fig. 2 have the configurations basically equal to those of ~~the~~ a typical computer. Thus, those explanations are omitted. The distribution server 207
450 also has ~~the~~ similar configuration ~~substantially equal to them~~. However, it is structurally different ~~in the structure~~ in that it has the distribution data store memory 209 and the radio unit 210 wirelessly and automatically connected to the portable information
455 terminal 201 in order to carry out a communication.
<Downloading of Music Data>

At first, a case in which a user of the portable information terminal 201 shown in Fig. 2 downloads music data ~~in~~ utilizing the above communication system
460 is described as an example. In this case, the user of the portable information terminal 201 initially accesses ~~to~~ a predetermined portal site on the Internet 204.

Fig. 4 shows an example of a menu screen when
465 the user accesses ~~to~~ the portal site. The menu screen customized for each user of the portable information terminal 201 is displayed on the display 226. In this example, a news button 241 for selecting a ~~site of a~~

news site, a mail button 242 for setting a mail
470 ~~distribution of a mail~~ and a music distribution button
243 for accessing ~~to a home page to carry out a~~
~~distribution of a~~ distribute music are placed on the
screen.

In ~~the~~ this ~~case of this example~~, it is supposed
475 that the user of the portable information terminal 201
selects the music distribution button 243. When the
music distribution button 243 is selected, the CPU 221
(Fig. 3) controls the access to the music server 205
shown in Fig. 2, in accordance with a URL (Uniform
480 Resource Locator) prepared in advance. Thereby, a
menu screen of its home page is displayed on the
display 226.

Fig. 5 shows an example of a menu screen for a
music distribution when the user selects a button
485 "Music Distribution". The menu screen is designed
that a predetermined number of songs whose
distributions are desired are displayed on the display
226. So, the user selects ~~the~~ a desirable song from
the displayed songs by using a radio button. If the
490 desirable song is ~~absent~~ not displayed, the user can
select a next button 251 or a previous button 252 to
~~indicate next song names or previous~~ locate other song
names.

~~The~~ This menu screen allows the user to also

495 ~~selects~~ select a manner of distributing music ~~on this~~
~~menu screen.~~ If the user selects an item
"Immediately", although a downloading fee is
comparatively expensive, the distribution is
immediately started. If the user selects an item
500 "Minimum Fee", instead of the comparatively cheap
downloading fee, the distribution is carried out in a
time band in which the downloading work is relatively
empty. In the system shown in Fig. 2, although the
distribution server 207 has the radio unit 210, there
505 may be a case that another radio unit or another radio
facility is used to send the data to the portable
information terminal 201. In the latter case, ~~there~~
~~may be a case that the data is~~ may be sent through a
line up to the radio unit or the radio facility. ~~So,~~
510 ~~in~~ In such a ~~case~~ instances, ~~it may be considered to~~
~~send the data~~ may be sent in a time band frame in
which the line is not busy or in the nighttime ~~in~~
~~which a~~ when the usage fee of the line is ~~cheap~~ low,
and thus, try to ~~save a~~ lower the communication cost.
515 Thus, if the user selects the item "Minimum Fee", it
takes a period of a half day or a day for the user to
receive the distributed desirable music.

It should be noted that ~~not only such a fee~~
~~system composed of~~ the fee system is not limited to
520 ~~two stages~~ options, but may also ~~another fee system of~~

employ three stages or more may be employed options,
depending on the music server 205. For example, a fee
system of three ~~stages~~ options such as "Immediately",
"Within Five Hours" and "Within One Day" may be
525 employed. When the user of the portable information
terminal 201 selects a music and a distributing manner
on the menu screen shown in Fig. 5 and then the data
according to the selection is sent to the music server
205, data to confirm the user is sent from the music
530 server 205 or the distribution server 207 to the
portable information terminal 201, and a confirmation
screen is displayed. Since the distribution of music
is usually ~~charged~~ for a fee, an input of a password is
required. Thus, it is possible to ~~protect the other~~
535 ~~persons~~ prevent others from illegally requesting the
downloading.

e Fig. 6 shows a ~~display~~ an example of the a user
confirmation display when the user selects the item
"Minimum Fee", ~~as an example of a screen for the sake~~
540 ~~of a user confirmation~~. When the user selects the
item "Minimum Fee", the music server 205 entrusts the
distribution server 207 with the distribution of the
music. The distribution server 207 determines a time
at which the music may be distributed at the ~~cheapest~~
545 lowest fee, and returns the time back to the portable
information terminal 201 as time data for ~~an aim of~~

the expected distribution time, and it is displayed on the display 226.

On the other hand, if the user of the portable
550 information terminal 201 selects the item
"Immediately" from the display content of Fig. 5, the
music server 205 sends information of this selection
to the distribution server 207 and instructs the
immediate execution of the distribution. At this time,
555 the password is also requested for the sake of the
user confirmation.—

 The first embodiment employs the manner of
entrusting the distribution server 207 with all the
distributions. However, it is not always limited to
560 this manner. For example, only in the case of the
selection of the item "Immediately", the music server
205 can immediately execute the distribution by using
a route connected through the Internet without any
intervention of the distribution server 207. It is
565 imagined that ~~a rate of persons~~ the number of people
who select the item "Immediately" is relatively low
because of the fee. Thus, even if the music server
205 performs the direct distribution ~~on to~~ to those
~~persons~~ people, the ~~conventional~~ occurrence of the
570 overload caused by the concentration of the
downloading operations is not easily induced. On the
contrary, when the music server 205 entrusts the

distribution server 207 with the collective
distribution, it is possible to simplify the process
575 of the distribution, the process for charging the fee
and the process for solving the trouble associated
with the downloading operation and the like.

The portable information terminal 201 and the
distribution server 207 in the first embodiment have
580 the radio units, respectively. So, they can be
automatically connected to each other, and the data
can be sent and received between them. The portable
information terminal 201 and the distribution server
207 have a folder all or a part of which ~~have~~has the
585 ~~same~~identical directory ~~structure~~structures, in order
to manage the operation ~~for~~of sending and receiving
the data.

Fig. 7 shows an example of a list of folders
used in the first embodiment. The list contains
590 information to identify an attribute of a
communication condition of a registered file ~~every~~.
Every folder ~~constituting~~constitutes a directory.
~~This~~By default, this information (hereafter, referred
to as a communication condition file) occupies a part
595 of the folders constituting the directory ~~as default~~.
Also, the list contains information to identify the
registered files every folder constituting the
directory. ~~This~~By default, this information

(hereafter referred to as an ID file) occupies a part
600 of the folders constituting the directory ~~as default.~~

A folder "A" and a folder "B" are designed such
that the portable information terminal 201 and the
distribution server 207 shown in Fig. 2 check a
content of the folder "A" and "B" for each hour
605 indicated by "Condition", and the names of the files
are "F₁" and "F₂". Here, a functional attribute
"Synchronization" implies that the portable
information terminal 201 and the distribution server
207 ~~are respectively equipped the have~~ folders which
610 ~~contents with the same content are same each other.~~ If
the files registered in the folders ~~of~~ with the same
name are different between the portable information
terminal 201 and the distribution server 207, the
~~insufficient missing~~ file is copied ~~each other to the~~
615 Portable Information Terminal or the distribution
server through the radio communication between them.
Also, if a file is removed ~~on one side~~ in either one of
them, the same file as the removed file is removed ~~on~~
~~the other side~~ from the other. The first embodiment
620 employs a protocol involving a transmission
confirmation control so that the above-mentioned copy
or removal can be perfectly executed.

A folder "C" is designed ~~such so~~ that an
actuation attribute is set ~~at~~ to "Real Time", namely,

625 when a file is added or removed, ~~they have the file~~
~~contents equal to each other~~ it is added or removed
from both the Portable Information Terminal and the
distribution server. Its file name is "F₃". That is,
if the actuation attribute is "Real Time", ~~for example,~~
630 if, for example, at the time the distribution server
207 adds a file, a radio communication is immediately
~~done at that point~~ executed. So, ~~its~~ the same file is
added to the portable information terminal 201. If a
file is removed from one side, ~~its~~ the same file is
635 also removed from the other side.

In a ~~folder "D",~~ the actuation attribute is
"Manual", and ~~its~~ the function attribute is
"Synchronization". Thus, ~~it is manually set that they~~
~~have the file contents equal to each other~~ the content
640 of the corresponding files in the Portable Information
Terminal and the distribution server are manually
synchronized. ~~Its~~ The file name is "F₄". In a ~~the~~
case of "Manual" actuation attribute, a metaphor is
equipped to report to the user the presence of target
645 ~~information-synchronizing~~. The target information is
synchronized in accordance with by using an ID file by
which can be identified by a file registered in a
folder assigned to it ~~can be identified~~. The user,
when needing a body of the file, specifies the
650 metaphor and carries out a communication actuation.

In a folder "E", ~~its~~ the function attribute is "Transfer". An actuation time for a transfer is set at "3:25" as a "Condition". ~~Its~~ The file name is "F₅". In a the case of "Transfer", there is a directionality
655 of a communication. That is, if a file registered in this folder is not present on a partner side between the portable information terminal 201 and the distribution server 207, its file is transmitted via a radio communication to the partner side. When the
660 transmission is completed, the file of the transmission source is erased.

It should be noted that "Period", "Real (Real Time)", "Manual" and "Time Specification" as ~~the~~ actuation attributes in the list of the folders shown
665 in Fig. 7 are merely ~~the~~ examples. For example, "position" can be used as ~~the~~ actuation attribute. This will be explained later. So, when the portable information terminal 201 enters into a particular position (area), it is actuated. Then, a particular
670 file is copied, transferred or removed.

Fig. 8 ~~shows a~~ flow chart of a process among the music server, the distribution server and the portable information terminal when the distribution server transmits music data to the portable information
675 terminal. ~~The portable information terminal 201, when~~ When the music distribution button 243 is pushed at

the portal site shown in Fig. 4, the portable information terminal 201 specifies a URL of the music server 205 shown in Fig. 2 (Step S301). ~~The music~~

680 ~~server 205, if~~ If there is an access through the Internet 204, the music server 205 transmits data through the Internet 204 to the portable information terminal 201 (Step S302) to indicate an order entry screen as the one shown in Fig. 5, ~~through the~~

685 ~~Internet 204 to the portable information terminal 201 (Step S302).~~ ~~The~~ In response to the transmission (Step S303), the portable information terminal 201 specifies a selection of a song and a distribution manner ~~in response to this transmission (Step S303).~~

690 ~~The~~ Upon receiving this specification, the music server 205, when receiving this specification, invokes an external program from an HTML program by using a CGI (Common Gateway Interface), ~~and transmits an instruction to switch the URL to the distribution~~

695 server 207 (Fig. 2) and a reception number to the portable information terminal 201 (Step S304). After that, the portable information terminal 201 sends and receives the data to and from the distribution server 207. Specifically, the portable information terminal

700 201 sends the ~~sent~~ received URL of the distribution server 207, the reception number and a song name targeted for the downloading operation to the

distribution server 207 (Step S305). It should be noted that, which server is used as the distribution
705 server 207 by the music server 205 is determined in advance between ~~both~~ the two of them.

The distribution server 207, when receiving the reception number, sends a password request screen shown in Fig. 6, in order to confirm the user using
710 the portable information terminal 201 (Step S306). The password inputted by the user is transferred to the distribution server 207 (Step S307). ~~The~~ If the inputted password is correct, the distribution server 207, ~~if the inputted password is correct,~~ specifies
715 the URL of the music server 205. If the reception number and the song name to download the music data and its song data are stored in a cache memory formed in the distribution data store memory 209, ~~its~~ the existing version is sent to the music server 205 (Step
720 S308). If the requested music data stored in the distribution data store memory 209 is reported in in response to the ~~reception of the~~ received reception number, the music server 205, ~~if the fact that the requested music data is stored in the distribution~~
725 ~~data store memory 209 is reported,~~ compares its version with a version of music data stored in the self-server. Then, if the versions are ~~equal to each~~ other identical, the music server sends a message to

the distribution server 207 indicating that the music
730 data ~~need not~~ does not need to be sent, ~~to the~~
~~distribution server 207~~. If the versions are
different from each other, or if the requested music
data is not present on the distribution server 207,
the music server sends the music data ~~itself~~ to the
735 distribution server 207 (Step S309).

If the music data is sent from the music server
205, the ~~The distribution server 207, if the music~~
~~data itself is sent from the music server 205,~~ stores
it in the distribution data store memory 209 ~~so as to~~
740 ~~cope with~~ in order to fulfill the ~~similarly~~
downloading request, and also ~~stores it in the folder~~
E shown in Fig. 7 (Step S310). In this case, if music
data of the latest ~~newest~~ version is sent since ~~a the~~
version in the distribution data store memory is
745 different, the distribution server 207 overwrites the
music data of the ~~newest~~ latest version on the music
data of the old version stored in the distribution
data store memory 209, and updates ~~a the~~ management
number of the version to the newest number. If a
750 message indicating that a transmission is not required
since the music data of the ~~newest~~ latest version is
stored in the distribution data store memory 209 is
sent from the music server 205, the distribution
server 207 reads out the corresponding music data from

755 the distribution data store memory 209, and stores it
in ~~the~~ folder E (Step S310).

The distribution server 207, which stores the
music data in ~~the~~ folder E, sets a distribution time
(Step S311). If the item "Immediately" is specified
760 on the portable information terminal 201, ~~a current
time or a time slightly elapsing from the current time~~
the time of the specification or a time slightly
removed from it is specified as the actuation
attribute. On the other hand, if the item "Minimum
765 Fee" is ~~specified~~selected, when the process on the
distribution server 207 uses an empty line, the time
set at Fig. 6 as the time band at which the
communication fee is ~~cheap~~low is specified as a
specification time. After that, the distribution
770 server 207 checks whether or not the specification
time ~~arrives~~has arrived, on the basis of a
predetermined periodic interval (Step S312). When the
specification time ~~is arrived~~arrives (YES), the
distribution server 207 distributes the corresponding
775 music data to the portable information terminal 201
(Step S313).

It should be noted that, in the case of
distributing the music data to the portable
information terminal 201, an identification number is
780 required in order to specify the portable information

terminal 201. This identification number may be registered on the portal site customized for the user, ef-as in Fig. 4, or may be registered when an access ~~is done to a the~~ home page ~~on of~~ the music server 205 shown in Fig. 5 is obtained. The first embodiment is explained under the assumption that the distribution server 207 has the unique radio unit 210. However, when the portable information terminal 201 is a portable telephone, the music data can be distributed by using a neighboring base station as the radio unit 210. In this case, the distribution server 207 may distribute the music data by using the telephone number of the portable information terminal 201. Also, if the telephone number is sent to the music server 205 or the distribution server 207 from the portable information terminal 201 together with the data of the reception number and the like and stored correspondingly to the reception number, it can be used in distributing the music data.

<Distribution of Mail>

An example ~~in which of~~ a distribution server 207 ~~distributes a distributing~~ mail received by the mail server 206 shown in Fig. 2 will be described below. Let us suppose that the mail server 206 has a function as a POP (Post Office Protocol) server for receiving and holding a mail from a portable information

terminal 201. If it is assumed that the mail server
206, ~~each time receiving~~receives one mail destined to
a user of a portable information terminal 201, sends
810 it to the corresponding portable information terminal
201, there may be many cases ~~that~~when a time longer
than a ~~the~~ communication time of the content of the
mail is spent on a procedure necessary for a
establishing connection ~~of to~~ the portable information
815 terminal 201. Thus, this is not ~~economical~~cost-
efficient. Also, if the user has a plurality of mail
addresses, the ~~economical~~economic efficiency is
~~damaged by the fact that~~lowered since the respective
mail servers 206 send the independently received mails
820 to the portable information terminal 201. So, in the
first embodiment, the distribution server 207
collectively manages and distributes the mails from
the users of the portable information terminals 201 to
thereby ~~drop~~lower the communication cost.

825 Fig. 9 shows the condition when a portable
information terminal displays a mail setting screen of
a distribution server, ~~in order~~used to set a ~~the~~
distribution of a mail. In order to display the mail
setting screen shown in Fig. 9, as described in the
830 above-mentioned example, it is enough to access ~~to~~ the
portal site shown in Fig. 4, ~~and~~ display its menu
screen, and then push the mail button 242. Thus, it

is possible to access ~~to~~ the distribution server 207
and then display its mail setting screen. Of course,
835 the mail setting screen can be displayed by directly
inputting the URL of the distribution server 207 and
using a ~~the~~ predetermined procedure.

On the mail setting screen displayed on ~~the~~
display 226, the user can set "Mail Server Patrol
840 Time", "Usual Communication Time Interval" and
"Emergent Communication Filter". "Mail Server Patrol
Time" ~~implies~~ specifies a time interval ~~when in which~~
the distribution server 207 patrols the respective
mail servers 206 in relation to the mail addresses of
845 the user. If this interval is long, it is difficult
to cope with an ~~emergent~~ urgent mail. "Usual
Communication Time Interval" implies a time interval,
in which when mails are received and obtained by any
of the mail servers 206 ~~and they are obtained~~, they
850 are collectively sent to the portable information
terminal 201 by radio. "Emergent Communication
Filter" implies a filter to immediately distribute ~~the~~
~~coincident~~ mail received from an address used to
identify ~~as an emergent-urgent~~ communication.

855 Fig. 10 shows the flow of the process that
enables the control of the above-mentioned
distribution server. For each arrival of a patrol
time (Step S331: YES), the distribution server 207

accesses ~~to a~~ predetermined mail server 206 (Step
860 S332). If ~~mails are~~ mail has been received (Step
S333: YES), ~~one of them~~ it is fetched, and it is
judged whether or not a transmission source agrees
with a mail address set as "Emergent Communication
Filter" (Step S334). If it agrees (YES), this mail is
865 stored in ~~the~~ folder C (real time actuation) shown in
Fig. 7 (Step S335). The mail received from the other
transmission source ~~has no emergency~~ is not urgent.
Thus, such a ~~mail~~ is stored in ~~the~~ folder B (for each
hour) (Step S336).

870 If the above-mentioned division is carried out,
~~it is~~ mail server 206 (Step S337 ~~judged~~ looks whether
or not another mail is received ~~by its mail server 206~~
~~(Step S337)~~). If it is ~~judged~~ found that ~~the other~~
mail is received (YES), ~~the processes on and after the~~
875 ~~steps S337-S334-S337~~ are performed ~~on them~~. If all
the ~~mails are~~ mail is processed as ~~mentioned in the~~
above-mentioned manner (Step S337: NO), the process is
returned back to the original state (Return). In a
case that the mail is not received at ~~the~~ step S333,
880 ~~the~~ a similar process is carried out.

It should be noted that the above-mentioned
process uses the emergent communication filter and
determines the distribution interval between the
~~mail~~ mail deliveries. However, depending on the

885 electronic mails, the ~~emergent~~ degrees of urgency can
be set, one by one. With regard to such ~~mail~~ mail,
the ~~emergent~~ degree of urgency is checked at a
processing step corresponding to ~~the~~ step S334. The
mail having a ~~high emergency~~ urgency may be stored in
890 ~~the~~ folder C, and ~~the mails except it~~ other mail may
be stored in ~~the~~ folder B.

Fig. 11 shows the flow in the distributing
process of the electronic mail in the distribution
server. The distribution server 207 checks a folder C
895 for the presence or absence of a mail ~~file of a mail~~
to be sent ~~to in the folder C~~ (Step S351). In a case
~~of the presence~~ there is a mail file (YES), its mail
content is immediately sent to a user of a portable
information terminal 201 ~~of a partner~~ by radio (Step
900 S352). ~~In a case of the absence of the file of the~~
~~mail to be sent to in the folder C~~ If there is no mail
in folder C to be sent, it is checked whether or not a
certain period (here, one hour) ~~elapses~~ has elapsed
(Step S353). If it ~~does~~ has not ~~elapse~~ elapsed (NO),
905 the operational flow returns back to ~~the~~ step S351 and
enters ~~in a~~ wait state.

If it is judged at ~~the~~ step S353 that ~~the~~ a
certain period ~~elapses~~ has elapsed (YES), a presence
or absence of a mail ~~file of a mail~~ to be sent to ~~in~~
910 ~~the~~ folder B is checked (Step S354). ~~In a case of the~~

~~absence of the corresponding mail~~ If there is no mail
file (NO), ~~a~~ the period is reset (Step S355), and the
operational flow again returns back to the process at
~~the of~~ step S351 (Return). ~~In a case of the presence~~
915 ~~of the file of the~~ If a mail file to be sent to ~~in the~~
folder B is present at ~~the~~ step S354 (YES), the mail
~~file of the mail is~~ sent to a user of a portable
information terminal 201 ~~of a partner by~~ radio (Step
S356). After that, the operational flow proceeds to
920 ~~the~~ step S355, and ~~a~~ the period is reset.

It should be noted that, Fig. 11 illustrates the
distributions with regard to ~~the~~ folders B, C.
However, if the distribution server 207 is responsible
for the distribution of the electronic mail as well as
925 the other various data such as music data and the like,
it is possible to distribute them in ~~a condition that~~
~~they are~~ an integrated ~~into one element~~ manner. In
this chase, while the various folders shown in Fig. 7
are checked, the corresponding file is sent
930 automatically or manually.

Fig. 12 shows the flow of a typical process of
the distribution server. If ~~a~~ the patrol time ~~is~~ has
arrived (Step S371: YES), the distribution server 207
confirms the actuation attribute illustrated in Fig. 7
935 (Step S372). If the file is present in ~~the~~ folder C
(Step S373: YES), the distribution server 207

distributes the file (Step S374). Next, it is checked whether or not the time specified for ~~the~~ folder E ~~is~~ has arrived (Step S375). In a case of the specified
940 time is arrived (YES), the file stored in the folder E is distributed (Step S376). Next, it is checked whether or not a predetermined time (for example, one hour) elapses from a previous distribution time with regard to the folders A, B (Step S377). If it elapses
945 (YES), the files present in the folders A, B are distributed (Step S378).

It should be noted that it is not always necessary to independently carry out the distribution for each folder. The respective files may be copied
950 to a buffer region, and the files targeted for the distribution may be collectively targeted for the transmission, in accordance with a series of procedures. Thus, for example, the electronic mail and the music data are collectively distributed at the
955 same time. Hence, it is possible to drop the cost necessary for the distribution.

(Second Embodiment)

Fig. 13 shows the schematic configuration of a communication system in a second embodiment of the
960 present invention. The communication system is composed of a portable telephone network 401, base stations 403₁ to 403_N responsible for respective service

areas 402₁ to 402_N~~—and an information distribution~~
center 404₁ and a position detection center 405 ~~which~~
965 ~~that~~ are connected to the portable telephone network
401. In this communication system, when a portable
telephone 406 serving as a portable information
terminal enters into a predetermined particular
service area 402, the position detection center 405
970 detects it. Then, in accordance with an actuation
attribute "Position" that is not included in the
actuation attributes shown in Fig. 7 of the first
embodiment, data for the service area 402 is sent to
the portable telephone 406. So, a territory guide
975 service is carried out by using a voice or a picture.
It should be noted that, it may be designed that the
position detection center 405 detects a position, on
the basis of a base station that manages the portable
telephone 406 or detects the position by using another
980 position detector such as GPS (Global Positioning
System).

Fig. 14 shows an example of a setting menu of a
territory guide service displayed on a display of a
portable telephone, in the second embodiment. A user
985 of the portable telephone 406 shown in Fig. 13 carries
out a predetermined operation to display this setting
menu on a display 411. This menu is designed ~~such so~~
that a "Corresponding Territory (service area)"

targeted for a guide and a "Guide Content" can be

990 ~~indicated~~ selected by using a radio button. For
example, let us suppose that the user of the portable
telephone 406 indicates Sinjuku as "Corresponding
Territory" and indicates a restaurant as "Guide
Content". Then, when the portable telephone 406 of

995 the user enters into the service area 402_N of Sinjuku,
the position detection center 405 sends position
information together with an ID of the portable
telephone 406 to the information distribution center
404. The information distribution center 404 has ~~the~~

1000 a table as shown in Fig. 7 of the first embodiment.

So, it wirelessly transmits data with regard to the
restaurants in Sinjuku to the corresponding portable
telephone 406. The function attribute in this example
may be "Synchronization".

1005 The user of the portable telephone 406 can
receive ~~the~~ similar services in a plurality of
territories (service areas). Thus, if the user
indicates two territories (for example, Sinjuku and
Tokyo) in advance, when the portable telephone 406
1010 enters into a service area 402₁ of Tokyo ~~after that~~,
the user can receive ~~the~~ guide of ~~the~~ desirable shops,
such as restaurants, bookstores and the like, and
tourist spots and the like near Tokyo Station.

(Third Embodiment)

1015 Fig. 15 shows ~~the~~a schematic configuration of a
communication system in a third embodiment of the
present invention. This communication system is
configured ~~such~~so that portable telephones 501₁ to 501_N
of respective persons have respective dedicated memory
1020 regions 504₁ to 504_N in a distribution server 503 on ~~an~~
the Internet 502. That is, the first portable
telephone 501₁ has a dedicated first memory region 504₁
in the distribution server 503. Similarly, the N-th
portable telephone 501_N has a dedicated N-th memory
1025 region 504_N in the distribution server 503. On the
Internet 502, for example, there is a camera shop
server 506 managed by a camera show or a card print
server 507 managed by a card print shop~~are placed~~.

Let us suppose that an owner of the first
1030 portable telephone 501₁ holds data to make a card in a
memory medium 511 and this data is uploaded to the
card print server 507. In this case, the owner of the
first portable telephone 501₁ wirelessly uploads it to
the first memory region 504₁ dedicated to the owner in
1035 the distribution server 503, while "Data For Making
Card", "Transfer" Data and "Distribution Time" are
clearly written. Similarly, let us suppose that an
owner of the N-th portable telephone 501_N wants ~~to~~a
large-sized print of a picture photographed by a
1040 digital camera 512~~at a large size~~. So, an output

terminal of the digital camera 512 is connected to the N-th portable telephone 501_N, and its picture data is wirelessly updated to the N-th memory region 504_N dedicated to the owner in the distribution server 503 while "Data For Camera Shop", "Transfer" data and "Distribution Time" are clearly written. A plurality of ~~kinds of~~ data can be stored in the respective dedicated memory regions 504₁ to 504_N, such as "Data For Making Card" and "Data For Camera Shop".

1050 The distribution server 503 periodically scans the memory regions 504₁ to 504_N. If "Transfer" data is stored in any of those regions ~~and this is the~~ ~~"Transfer" data, "Distribution Time" as a condition~~ ~~and a destination of the data are~~ is read out as a
1055 condition and a destination of the data to then distribute to a corresponding server at an indicated time. In a case of "Data For Making Card" stored in the first memory region 504₁, for example, this is distributed to the indicated card print server 507 at
1060 the indicated time. Also, in a case of "Data For Camera Shop", this is distributed to the indicated camera shop server 506 at the indicated time.

As mentioned above, in the third embodiment of the present invention, since the distribution server
1065 503 is installed, it is not required that a plurality of card print servers 507 themselves are placed, even

if there is a time ~~band~~frame in which accesses are concentrated on the card print server 507. Moreover, the respective servers, such as the camera shop server 1070 506,— and the card print server 507, can commonly use the distribution server 503. Thus, it is possible to attain a~~the~~ very effective communication system. Of course, the dedicated memory regions 504₁ to 504_N are not always used only for~~the~~ "Transfer" data. The 1075 function attribute may be set ~~as~~to "Synchronization". For example, when the distribution server 503 obtains data from a certain server and inserts it into the first memory region 504₁, the data may be automatically sent out to the first portable telephone 501₁. Even 1080 in this case, it is naturally possible to select a time ~~band~~frame for a distribution and cheaply send data.

As mentioned above, according to the first aspect of the present invention, the distribution 1085 server and client terminal have any number of folders in which at least parts thereof ~~are~~ ~~correlated~~correspond to each other ~~in the one to one relationship~~, and the distribution server stores a file read from a content server in the first folder. 1090 For example, if the downloading of a predetermined file is requested by a number of client terminals, and a long time is required in order to transfer the file

to those client terminals, the content server to which the file is requested stores the file in the first
1095 folder of the distribution server. Then, the actuation ~~timings~~time can be suitably set to thereby disperse the loads in the entire communication system. Moreover, the file is wirelessly communicated between the distribution server and client terminals. Thus,
1100 it is also possible to reduce the load on the telephone line.

Also, according to the first aspect of the present invention, the loads can be dispersed without any increase of the facility, by using the
1105 distribution server for the transfer of the file in the content server or the like, on which the accesses from the client terminals are ~~transiently~~temporarily concentrated.

Moreover, according to the first aspect of the
1110 present invention, the periodical actuation is carried out as one manner of the actuation of the actuation timing setting section. Thus, the processes themselves on the distribution server can be dispersed by properly setting the periodic interval if the
1115 transfer of the file is not ~~in a great hurry~~urgent.

According to the first aspect of the present invention, the actuation timing setting section sets the time when the actuation is carried out. So, the

technique for using the nighttime in the case of ~~the~~
1120 file transfer having no emergency can be used to
thereby ~~make~~ lower the communication fee ~~cheaper~~ and
also attain the effective usage of the distribution
server.

According to the first aspect of the present
1125 invention, the actuation timing setting section is
actuated when the new file is stored in the first
folder. Thus, as for the transfer of the ~~emergent~~
urgent file, this enables its request to be executed.
Of course, if the distribution server is responsible
1130 for the distributions of the files from the various
servers and the like, the timings ~~themselves~~ of the
transfers of the ~~emergent~~ urgent files can be
dispersed entirely and temporally. Hence, there is
little fear that the loads are concentrated ~~on their~~
1135 one particular time.

Also, according to the second aspect of the
present invention, the position is used as the factor
of ~~the file transfer of the file~~. Thus, the necessary
information with the position information as the
1140 trigger can be sent to the movable apparatus such as
the portable telephone and the like. Hence, this is
effective for the guide of ~~the place~~ position and the
like.

Moreover, according to the third aspect of the

1145 present invention, if the uploading operations of the
files from the mobile terminals are concentrated on
the predetermined regions among the several particular
memory regions, the distribution server is placed
between them. Then, the mobile terminals store the
1150 file in the individual memory region corresponding to
each of the mobile terminals within the distribution
server. Thus, the concentration of the loads can be
avoided. Hence, this has the merit that the mobile
terminal can transmit and receive the file without
1155 directly recognizing the location of the particular
memory region.

Abstract of the Disclosure

A portable information terminal ~~201~~ is connected through a radio base station and the like to ~~an~~ the Internet ~~204~~. Furthermore, a music server ~~205~~, a mail server ~~206~~ and a distribution servercenter ~~207~~ is are connected to the Internet ~~204~~. The distribution servercenter ~~207~~ distributes data stored in the music server ~~205~~ and mail server ~~206~~. The distribution servercenter ~~207~~ includes a distribution server, a distribution data store memory ~~209~~ in which data for the distribution is transiently stored and a radio unit ~~210~~ which wirelessly distributes data to the portable information terminal ~~201~~. When accesses are concentrated on the music server ~~205~~ from the distribution information terminals ~~201~~, the music server ~~205~~ transfers a file including music data to the distribution servercenter ~~207~~. The distribution servercenter ~~207~~ wirelessly transfers the file to each of the portable information terminals ~~201~~ with temporal dispersion. Thus, Employing above structure, even if the accesses for the communications are transiently temporarily concentrated on the particular apparatuses such as the server, it is possible to obtain employing the above structure allows the communication system which can avoid the occurrence of the an overload condition.